

[0114] Referring to FIG. 7, the fuser 300' according to the embodiment includes a fuser 110', input 210, circuit 220, temperature sensor 230, fuser controller 240, electricity transmitter 250, and harmonic inductor 260.

[0115] The fuser 110' is provided with a plurality of heating elements 111', including first heating element 112-1 and second heating element 112-2 configured to receive power transmitted through the inductor 260.

[0116] The first heating element 112-1 is a heating element arranged at the center of a heating roller. The first heating element 112-1 may consume 700 w of power.

[0117] The second heating element 112-2 is a heating element arranged at both sides of the first heating element 112-1. The second heating element 112-2 may consume 600 w of power.

[0118] The fuser 110' is provided with a plurality of heating elements 112-1 and 112-2, and thus the electricity switch 223 may switch the power being provided to each of the plurality of heating elements using a plurality of switching elements.

[0119] The fuser controller 240 may determine the heating element to be used in a fusing process. More specifically, the fuser controller 240 may receive information on printing paper from the controller 170 of the image forming apparatus 100, and determine to use only the first heating element 112-1 or the first heating element 112-1 and second heating element 112-2 at the same time depending on the received information on printing paper.

[0120] For example, in response to the received information on printing paper being less than a predetermined paper size, the fuser controller 240 may determine to use only the first heating element 112-1, and perform a control on driving the first heating element 112-1. However, in response to the received information on printing paper being above the predetermined paper size, the fuser controller 240 may perform a control on driving both the first heating element 112-1 and second heating element 112-2. Herein, a same control method or a different control method may be used to each of the first heating element 112-1 and the second heating element 112-2. Specific control methods were explained hereinabove with reference to FIG. 3, and thus repeated explanation will be omitted.

[0121] Meanwhile, when the operational state of the image forming apparatus 100 is at a waiting mode or preparation mode, it is unknown with which printing paper the printing operation will be performed, and thus the fuser controller 240 may control such that power is provided to both the first heating element 112-1 and second heating element 112-2.

[0122] Configurations of the input 210, circuit 220, temperature sensor 230, electricity transmitter 250, and harmonic inductor 260 are the same as in FIG. 3, and thus repeated explanation will be omitted.

[0123] As aforementioned, even when using a fuser consuming a lot of power, the fuser 300' according to the present embodiment does not provide a predetermined phase that consumes a lot of power to a plurality of heating elements, thereby preventing flickering.

[0124] FIG. 8 is a block diagram illustrating a detailed configuration of a fuser according to an embodiment. More specifically, the fuser 300" according to the embodiment is provided with a fuser 110' having a plurality of heating

elements, and a plurality of switching elements capable of changing the arrangement of the plurality of heating elements.

[0125] Referring to FIG. 8, the fuser 300" may include a fuser 110', input 210, zero cross detector 221, fuser controller 240, inductor 260, and a plurality of switching elements 271, 272, 273, and 274.

[0126] The fuser 110' is provided with a plurality of heating elements 112-1, 112-2 configured to receive power transmitted through the inductor 260.

[0127] The first heating element 112-1 is a heating element arranged at a center of a heating roller. The first heating element 112-1 may consume 700 w of power.

[0128] The second heating element 112-2 is a heating element arranged at both sides of the first heating element 112-1. The second heating element 112-2 may consume 600 w of power.

[0129] The first heating element 112-1 and second heating element 112-2 may be connected in series or in parallel regarding the AC power by the plurality of switching elements 271, 272, 273, and 274.

[0130] The first switching element 271 is arranged between the inductor 260 and first heating element 112-1, and the first switching element 271 may selectively provide external AC to the first heating element 112-1. More specifically, a first end of the first switching element 271 may be connected to a first end of the inductor 260, and second end of the first switching element 271 may be connected to a first end of the first heating element 112-1.

[0131] The second switching element 272 is arranged between the inductor 260 and second heating element 112-2, and the second switching element 272 may selectively provide external AC to the second heating element 112-2. More specifically, a first end of the second switching element 272 may be connected to the first end of the inductor 260, and a second end of the second switching element 272 may be connected to a first end of the second heating element 112-2.

[0132] The third switching element 273 may selectively connect a second end of the first heating element 112-1 and a second end of the second heating element 112-2.

[0133] The fourth switching element 274 may selectively connect the second end of the first heating element 112-1 with the first end of the second heating element 112-2.

[0134] The input 210 may receive AC power from outside, and provide the received AC power to the inductor 260 and zero cross sensor 221.

[0135] The zero cross sensor 221 senses a zero cross point of the received AC power. Detailed configuration and operations of the zero cross sensor 221 were explained hereinabove with reference to FIG. 3, and thus repeated explanation will be omitted.

[0136] The fuser controller 240 changes the operational state of the plurality of switching elements 271, 272, 273, and 274 according to the operational state of the image forming apparatus 100. More specifically, in response to the operational state of the image forming apparatus 100 being at a preparation state or waiting state, a turn-off signal may be applied to the second switching element 272 and third switching element 273, and a turn-on signal may be applied to the fourth switching element 274 so that the first heating element 112-1 and second heating element 112-2 are connected in series. Furthermore, a driving signal may be applied to the first switching element 271.